thereby excite said working gas into a plasma to sputter said metal from said target onto said working substrate, an amount of said DC power being no more than 18kW normalized to a circular reference substrate of 200mm diameter, thereby achieving an ionization density of said metal of at least 20%.

7. The method of Claim 6, wherein said metal comprises aluminum.

8. The method of Claim 6, wherein said metal comprises copper.

9. The method of Claim 6, wherein said metal comprises titanium.

10. The method of Claim 6, wherein an integrated magnetic flux produced by said outer pole is at least 1.5 times an integrated magnetic flux produced by said inner pole.

11. (Amended) An tungsten fill process, comprising the steps of:

placing a substrate containing a hole formed in a dielectric layer in a magnetron sputter reactor including a titanium target and a [rotatable] magnetron comprising an inner pole of a first magnetic polarity and producing a first total magnetic flux and an outer pole of an opposite second magnetic polarity, producing a second total magnetic flux at least 1.5 times said first magnetic flux, and surrounding said first magnetic pole;

in said magnetron sputter reactor, sputtering a barrier layer of titanium and titanium nitride into said hole; and

thereafter filling tungsten into said hole of said substrate [by chemical vapor deposition].

12. The process of Claim 11, further comprising a rapid thermal anneal of said substrate performed between said sputtering and filling steps.

13. The process of Claim 11, whercin there is no annealing step between said sputtering and filling steps.

14. (New) The process of Claim 11, wherein said filling is performed by chemical vapor deposition.

15. (New) The process of Claim 11, wherein said filling is performed by sputtering.

16. (New) The process of Claim 11, further comprising rotating said magnetron about a back of said target.